

THE NORTHERN SEA ROUTE

The 1967 navigation season on the Northern Sea Route (NSR) has been heralded by a Soviet announcement that transit of the route by commercial vessels of foreign countries will be permitted this year for the first time. Foreign vessels have previously been permitted along only the western part of the route. Although the prospects for greatly expanded use of the route for through traffic this season appear to be dim, potential foreign users are not entirely lacking. The principal significance of the Soviet proposal may, however, be political. Since commercial vessels transiting the NSR must depend on the extensive Soviet icebreaking and weather forecasting services, foreign use of the route could serve to reinforce Soviet claims to sovereignty over the Arctic seas north of the USSR. Even if use by foreign vessels is limited, the announced opening of the route makes good propaganda for the USSR since it can be interpreted in Japan and Europe as a Soviet willingness to extend areas of mutual cooperation. Also, on the 50th anniversary of Soviet rule it dramatically underscores Communist scientific-economic achievements in the polar regions.

Historical Background

The development of what is now the NSR dates back to the quest for a Northeast Passage to the Orient in the middle of the 16th century. Until the 1917 revolution the only portions of the route that were used regularly for navigation were largely in the hands of foreigners, often acting on the basis of concessions granted by the czarist government. The newly formed Soviet Government was interested in developing an efficient transportation system along the northern Siberian coast for both economic and strategic reasons. It was felt that the resources of an enormous area of hitherto unexploitable territory could be tapped if the river mouths along the Siberian shore were made regularly accessible to maritime shipping. Furthermore, such a route would enable Soviet ships to pass between European and Asiatic USSR without crossing foreign, potentially hostile waters and indeed almost without losing sight of the Soviet coast. In 1920 a special committee for the NSR (Komsevero-put') was created for the purpose of organizing and supervising trading ventures through the Kara Sea to the estuaries of the Ob' and Yenisey rivers. These experiments in commercial exploitation of the route, known as the Kara Expeditions, were successful enough to encourage more extensive investment in the Arctic. As part of the massive administrative reorganization that occurred during the First Five Year Plan a new government department—the Chief Administration of the Northern Sea Route (Glavsevmorput'-GUSMP)—was created in 1932 to develop, equip, and maintain an Arctic sealand. Carrying out its mission in the 1930's, GUSMP constructed port facilities at 11 Arctic settlements, formed an icebreaker fleet, established extensive weather- and ice-forecasting facilities, and developed staging, dispatching, and controlling procedures for shipping. To increase its knowledge of the Arctic environment and to train Arctic specialists, GUSMP set up its own research and training organizations, including the Arctic Scientific Research Institute and the Hydro-

graphic Institute. At the same time GUSMP also sought to stimulate northern economic development by conducting geological explorations for minerals and operating numerous mining, fishing, and agricultural enterprises. GUSMP's empire expanded until 1938, when it extended over more than a quarter of the USSR and controlled a labor force of approximately 35,000 persons.

In following years, the Soviet Government gradually dissolved the once omnipotent GUSMP by shifting its many functions to appropriate ministries. Although some of these changes have coincided with "bad" years on the sea route, they more likely reflect an attitude that the route had developed into a normal shipping operation and hence should be managed in a routine way. The Ministry of the Maritime Fleet is now responsible for overall operations on the NSR; its Icebreaker and Arctic Fleet Administration in Murmansk has direct control of navigation on the route. Shipping on the northern rivers is controlled by the Ministry of the River Fleet. Weather and ice forecasting, as well as Arctic scientific research, is the primary responsibility of the Main Administration of the Hydrometeorological Service. The Polar Department of the Ministry of Civil Aviation is responsible for all nonmilitary air operations in the Arctic.

Description of Route and Navigation Season

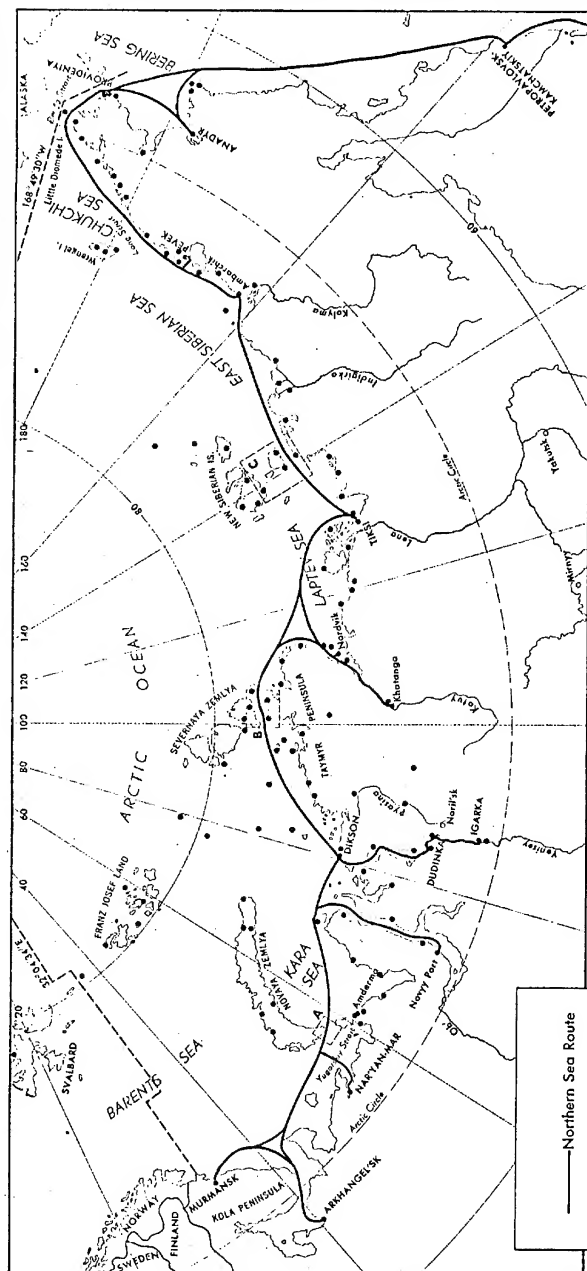
The NSR extends some 3,400 nautical miles* from the Barents Sea in the west to the Bering Sea in the east, passing through a series of seas and straits but mostly lying close to the barren Arctic mainland or the offshore islands (see main map). Ships generally move from the Barents Sea to the Kara Sea through the Kara Strait (Proliv Karskiye Vorota), which is 18 miles wide. At times the 1.5-mile-wide Yugorskiy Strait (Proliv Yugorskiy Shar) to the south can also be used, and in some years ships can go around the northern end of Novaya Zemlya. Passage from the Kara Sea to the Laptev Sea is made through the Vil'kitskiy Strait (Proliv Borisa Vil'kitskogo), where four small islands restrict the width to 22 miles. Between the Laptev Sea and the East Siberian Sea, passage is through either the Laptev Strait (Proliv Dmitriya Lapteva), 27 miles wide, near the mainland or the Sannikov Strait (Proliv Sannikova), 31 miles wide, to the north. From the East Siberian Sea, passage to the Chukchi Sea is made via Long Strait (Proliv Longa)—at 58 miles, the widest strait on the route—and thence through the Bering Strait.

The eastern and western segments of the NSR are generally navigable to merchant ships for about 4 months annually, from early July through late October. Ice conditions along the central portion of the route, however, limit the period during which transit of the NSR is feasible to a maximum of 8 to 10 weeks, usually commencing in August. Throughout the season, traffic is heaviest at the eastern and western ends of the route; relatively few Soviet cargo ships transit the entire route.

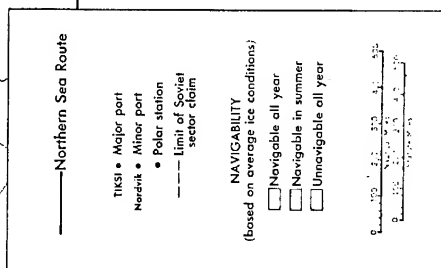
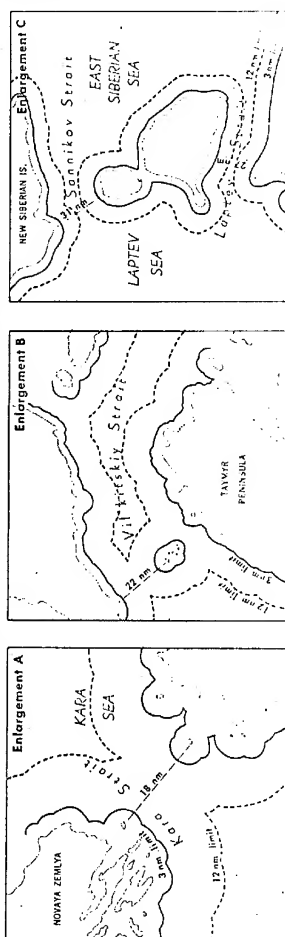
The warming influence of the Gulf Stream usually opens the western end of the route first. Operations generally begin in mid-June, with an icebreaker cutting a path through the Kara Sea to the estuary of the Yenisey River. Merchant ships follow in convoys of 2 to 10 vessels calling at the ports of Nar'yan-Mar, Novyy Port, Dikson, Dudinka, and Igarka. Some go as far as Nordvik and Tiksi.

* Nautical miles are used in this memorandum.

THE NORTHERN SEA ROUTE



TERRITORIAL WATERS IN STRAITS ALONG THE NORTHERN SEA ROUTE



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At the eastern end of the route, where ice conditions are generally more difficult, convoys assemble and start out from Provideniya in late June. Pevek is the destination for most of these ships, although some traffic reaches Ambarchik and points as far west as Tiksi. At the port of Tiksi ocean cargo from the west and river cargo from the south is transferred to lighters and coastal vessels serving a number of smaller ports nearby. At small ports at the mouths of navigable rivers, also, cargo is transferred to river ships and barges. The entire NSR is officially declared open sometime during the first half of August when the major shipping lanes have been cleared by either icebreakers or the recession of the pack ice. Navigation conditions usually are optimum for 8 to 10 weeks, during which 100 to 150 ships are underway along the route. Sailing time from Murmansk to Provideniya during this period ranges from

15 to 25 days, depending on ice conditions. Near the end of the navigation season each year a convoy of Soviet naval vessels transfers units eastward to the Pacific fleet. The naval convoy has occasionally been hung up by the ice and forced to remain in the Arctic over the winter.

The length of the navigation season, as well as the movement of traffic on the route, is controlled by the extent and thickness of sea ice, and this varies from year to year. Within a navigation season, weather may deteriorate and bottlenecks may develop unexpectedly, usually in the narrow straits. Even in more open areas a shift in wind and sea currents can quickly move large concentrations of sea ice into shipping lanes and completely curtail navigation. Persistent fogs that are common during the summer, as well as scattered shoals, further hamper navigation.

Navigation Services and Scientific Research

To operate a reliable shipping route in the extremely harsh Arctic environment the Soviets have made a huge capital investment in supporting services. Most significant has been the establishment of a powerful and efficient fleet of icebreakers and icebreaker transports. Twelve to fifteen icebreakers, including the 39,200-horsepower nuclear-powered icebreaker *Lenin* (which was out of commission in 1966), are generally used on the route to open sealanes and to convoy ships. This fleet can cope with pack ice floes that during the summer may remain 10 or more feet thick. The Soviets also plan to build two additional 30,000-horsepower nuclear-powered icebreakers and three new conventional icebreakers by 1971. Since 1962 six *Angren*-class icebreaker transports have been put into operation in the polar seas. These new vessels, as well as five older *Lena*-class vessels, can travel the NSR without continuous icebreaker support. In light ice they can act as icebreakers for other ships.

A large network of polar stations and weather stations has been organized to provide essential current reporting and long-range forecasts of weather and ice conditions, as well as to perform basic environmental research. At present over 100 polar stations, including 5 observatories, make meteorological, hydrological, and in some cases geophysical observations on a regular basis. The stations are located not only along the mainland coast but also in the islands, as far north as 81°44'N.

Surveillance of ice conditions is accomplished both by aircraft based at some 50 airfields and by helicopters that operate directly off the decks of icebreakers. Aircraft observers advise icebreakers and merchant ships of local ice conditions and direct them to zones of minimum ice concentration and leads through the ice. Regional ice reports and charts are compiled at land bases and transmitted by voice and photofacsimile to vessels on the route. The ice-weather forecasting service, as well as the icebreaker fleet, is administered from the three major ports—Dikson for the western sector, Tiksi for the central sector, and Pevek for the eastern sector. A hydrographic service has also been actively charting shallow waters and providing lights and buoyage.

The USSR is conducting an ambitious program of basic scientific research on the entire Arctic environment, largely under the direction of the Arctic and Antarctic Scientific Research Institute (originally the Arctic Scientific Research Institute). This program includes maintenance of the much publicized drift ice stations and high-latitude airborne expeditions in the Polar Basin. At the drift stations, teams of scientists and workers carry out meteorological, oceanographic, and geophysical investigations throughout the year. Only one drift station, North Pole 15, is presently in operation, but North Pole 16 is scheduled to be set up in the autumn of 1967. The high-latitude airborne expeditions annually resupply and reman the drift stations and also land parties to collect scientific data from unmanned stations throughout the basin. Airborne and icebreaker groups also set out Drifting Automatic Radio Meteorological Stations (DARMS's) and Drifting Automatic Radio Beacons (DARB's) on the icepack. During recent winters long traverses have been made, on foot and by vehicle, over the pack ice off the coast of central and eastern Siberia to study both ice dynamics and hydrological conditions. These programs of basic environmental research have been of practical value in improving navigation on the NSR and in constructing military facilities in the Arctic. Achievements of the programs as well as the operational experience gained in the polar environment, have earned the Soviet scientists respect in various fields and have facilitated their creative operations in the Antarctic.

The direct economic costs of all Arctic operations have been high—three to four times more than costs of operations in the developed areas to the south. To retain personnel, wages must include special benefits and area allowances and are about 1.5 to 2.5 times higher than in developed areas. Machines and equipment are also more expensive because they wear faster, even though many are specially designed for operation at low temperatures.

Use of Route

The Soviet decision to permit transit of the NSR by foreign cargo vessels and simultaneously to initiate a new Soviet cargo liner service between Europe and Japan was undoubtedly motivated in part by the desire to obtain some revenue from the enormous Soviet investment in polar operations. Prospects for any greatly expanded foreign use of the NSR, however, appear to be limited.

Although the distance between western Europe and Far Eastern ports north of Hong Kong is shorter via the NSR than via the Suez Canal, the route's trade potential is greatly reduced by its short season and the physical difficulties of navigation in the Arctic. An example is the trip between London and Yokohama, which is 3,500 miles shorter via the NSR than via the Suez Canal (see map and graph at right). The Soviets claim this distance advantage would effect a saving of 13 days' travel time between the two ports, but Norwegian shipowners feel that the lower speeds through the ice would shorten the run by only 8 days. Any savings would be substantially offset by the high insurance rates that prevail for Arctic navigation and by the icebreaker-aerial reconnaissance service and pilotage fees that the Soviets intend to charge. A preliminary figure quoted to the Japanese by the Soviets for icebreaker services is \$13,000 for a 7,000-ton general cargo vessel. Such a vessel would pay a fee of about \$7,000 to transit the Suez Canal. Other factors partly offsetting the distance advantage of the route include the short navigation season, the necessity of following a long, dangerous shipping lane, the financial hazard of possible ice entrapment, and the insufficient service and repair facilities available. Vessels using the NSR may have to carry additional reserve stores, and some may require structural modifications to withstand ice conditions. Furthermore, the NSR provides little or no opportunity for intermediate trade stops, a major source of income for some shipowners.

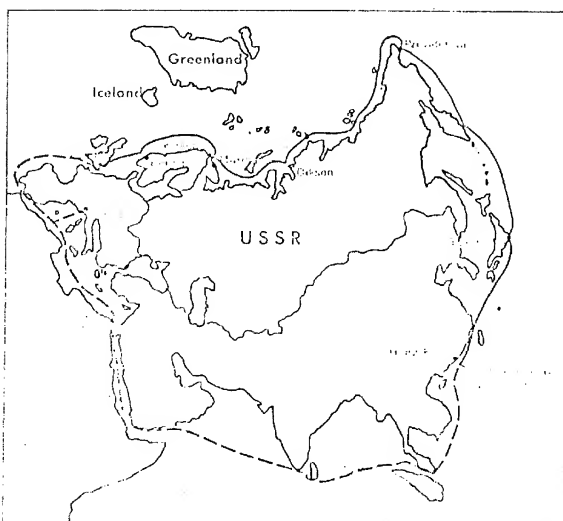
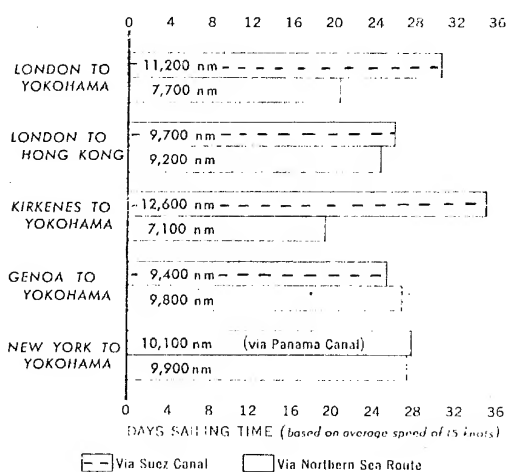
Even with these drawbacks the new route might elicit some interest in northern Europe, where distance savings may be great enough to make the trip profitable. Shipping between a port in northern Norway—Kirkenes for example—and Japan would realize up to a 45 percent saving in distance by using the NSR. For the Japanese, whose economy depends so heavily on the import of raw materials, the NSR may offer several trade opportunities. Items such as iron ore from northern Norway, apatite from the USSR's Kola Peninsula, and coal from Poland might be suitable bulk cargo for the route. The NSR is unlikely to attract shipowners from southern Europe, because the distance to the Orient is about the same as through the Suez Canal. Shipowners handling the heavy volume of trade between the east coast of the United States and Japan are also unlikely to be interested in the minute reduction in distance afforded by using the NSR rather than the Panama Canal.

In addition to providing a seasonal capability for transferring naval vessels, the NSR carries cargo to and from the Soviet Arctic. Freight turnover for the route grew from 136,000 tons in 1933 to over 3,000,000 tons in 1966. The NSR has been instrumental in exploiting timber reserves along the Yenisey and Lena rivers, nickel

deposits at Noril'sk, and tin deposits near Pevek. The timber industry, which accounts for the major share of Arctic exports, is centered at the Yenisey port of Igarka, where Soviet as well as British and Scandinavian timber ships call annually. A recent development in the timber trade has been the export of timber from the Lena River area to Japan in Soviet ships. Even though tonnage on the route continues to increase, domestic use alone probably cannot pay for the enormous investment in supporting services.

The decreasing importance of the NSR relative to other types of domestic transportation also may have influenced the decision to open the route to transit by foreign vessels. The southward orientation of Siberian trade and development has been accelerating during the last decade or so. Settlements are being supplied and resources are being exploited via a transport network extending from the south into the subarctic. Major navigable rivers and new rail lines and pipelines now link the subarctic and Arctic with the core of economic development along the Trans-Siberian railroad, which operates the year round and handles in one week twice the annual freight turnover on the NSR. As subarctic complexes such as those centered on Bratsk, Mirny, and Yakutsk continue to develop, they will expand the southward-oriented trade area and afford more competition to the NSR, particularly in the Laptev Sea and Yenisey Gulf areas.

COMPARATIVE DISTANCES FROM EUROPEAN
TO FAR EASTERN PORTS



Arctic Sovereignty Problems

Implicit in the announcement of permission for foreign use of the entire NSR is an assertion of Soviet authority in the waters traversed. Like the czarist government before it, the Soviet Government has advanced several claims to sovereignty in the Arctic. In a 1926 decree the USSR claimed all land and immovable ice formations within the triangular area bounded by the Soviet Arctic coast on the south and the meridians 32° 04' 31" E and 168° 49' 30" W. Excluded from the sector were the easternmost islands of the Svalbard Archipelago in Europe and Little Diomed Island in the Bering Strait, which belong to Norway and the United States, respectively. In 1928 and 1950, Soviet writers interpreted the sector as extending to the open polar seas, including drift ice. Although the Soviet Government has not excluded foreign vessels from this broad sector and has not actively pushed the concept in recent years, it has consistently demonstrated a strong proprietary interest in the area. Moreover, it continues to keep the sector concept alive by delimiting the sector on all Soviet maps with a symbol defined as "Polar Domain [Vladeniye] of the USSR."

Soviet territorial waters *per se* were defined in 1927 as a 12-mile zone bordering the entire Soviet coast. In recent years the USSR has stated emphatically that the NSR passes through Soviet "territorial" and "internal" waters. Specifically mentioned are the straits leading to the Kara Sea, which are described as "overlapped" by Soviet territorial waters (see Enlargements A, B, and C). The Laptev and Samikov straits, which unite the Laptev and East Siberian seas, are said to belong "historically" to the Soviet Union.

Although these claims have not been recognized officially by other nations, neither have they been challenged aggressively, because the route has not been vital to world trade and because, in practice, transit of the NSR is dependent on Soviet icebreaker and weather forecasting facilities. The United States recognizes territorial waters to a 3-mile limit and officially rejects the 12-mile zone claimed by the USSR. In practice, however, it observes the Soviet 12-mile zone. The United States has not recognized the Soviet claim to the Laptev and Samikov straits and has pointed out that the Soviet Government has no right to interfere with passage through the straits, because the 1958 Geneva Convention on the Territorial Sea and Contiguous Zone guarantees foreign vessels the right of innocent passage through straits used for international navigation between two parts of the high seas. The right of innocent passage through straits and territorial waters is of critical importance along the NSR, since ice can often force a ship to navigate within 12 and even 3 nautical miles of the shore.

In recent years the activities of US icebreakers, aircraft, submarines, and drift stations in the Soviet polar sector have put Soviet attitudes and intentions regarding sovereignty in the polar sector to a practical test. The Soviets have evinced no desire to push their broad sector claim, but they seem resolute in maintaining their authority over coastal waters. When US activity has deeply penetrated the sector, the USSR has reacted strongly. A serious incident occurred in July 1960 when a Soviet fighter plane shot down a USAF RB-47 reconnaissance plane over the Barents Sea. The USSR alleged that the plane had violated its airspace at a point 14 miles north of a cape on the northern side of the Kola Peninsula, whereas the United States contended that the plane did not come within 30 miles of Soviet land or pass over sea areas ever claimed as territorial waters of the USSR.

During the summers of 1963-65 US icebreakers conducted oceanographic surveys of the Arctic seas

traveled through waters claimed by the USSR but did not make a complete transit of the route. The Soviets maintained close surveillance of the ships, and although they did not forcibly repel the vessels, they did strongly reaffirm Soviet authority in these waters through diplomatic notes. In 1963 the USCGC *Northwind* entered the area from the east and traveled uncontested to the Laptev Sea via the Samnikov Strait. During the following summer the USS *Burton Island*, with a prior agreement to receive ice data from the Soviet Hydrometeorological Service, traveled westward along the NSR as far as 71° 23' N 162° 14' E. An exchange of diplomatic notes during the voyage, however, resulted in a decision by the United States not to transit the entire route at that time. In 1965, after formally rejecting the Soviet claims to Arctic straits made in these notes, the United States again sent the *Northwind* into the region, this time from the west with the intention of transiting the NSR. After conducting extensive oceanographic surveys in the Kara Sea and sailing to within 30 miles of the Vil'kitskiy Strait the vessel was damaged by ice and forced to return. Plans for the *Northwind* to return to these waters in 1966 via the Samnikov Strait were canceled because of the tense situation in Vietnam.

Prospects

The Soviet invitation to world commerce to use the NSR reflects a distinct modification of earlier attitudes and policies. For example, by opening the entire route to foreign shipping the Soviets appear to have relaxed their security over a sensitive area. The deployment of operational ICBM sites in the interior of the country, however, has decreased the relative importance of manned aircraft bases in the Arctic and the strategic value of the Arctic area as a whole. Military activity along the NSR is most sensitive in the western half, where foreign ships were already permitted, although under close Soviet control. The presence of foreign ships east of the Yenisey estuary thus constitutes only a minor threat to Soviet security—the possibility of observing closed ports and monitoring communication facilities.

There is no doubt that the Soviets expect to earn additional foreign exchange by the service fees charged to foreign vessels and by their own new cargo service. At the same time they will highlight their status as a growing maritime power. The possibility is good that some Scandinavian or Japanese shippers will try the route this season to see if any material savings can be realized. Until this practical experience is gained, it is impossible to estimate the real potential of the NSR as an international shipping lane. Similarly, the exact nature of the transit agreement will have to be studied and the extent of Soviet control over foreign shipping must be observed in practice before the sovereignty implications can be evaluated definitively.



Convoy assembling at Provideniya

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Approved For Release 2002/05/09 : CIA-RDP84-00825R000100040006-6

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